

INTISARI

Patch hydrogel berfungsi sebagai sistem penghantaran obat transdermal, pembalut luka steril, dan media infiltrasi sel. Nanokitosan dan *cinnamaldehyde* memiliki efek antibakteri, antioksidan, antiinflamasi. Kalsium karbonat sebagai sumber ion kalsium yang mendukung hemostasis. *Platelet-Rich Plasma* mengandung protein dan faktor pertumbuhan untuk memperbaiki jaringan. *Hydrocolloid dressing* mampu menjaga kelembaban dan menyerap cairan eksudat di sekitar area luka. Penelitian ini bertujuan untuk mengetahui pengaruh pH dan penambahan *cinnamaldehyde*, kalsium karbonat, dan *freeze-dried platelet rich plasma* pada degradasi dan *release patch hydrogel* gelatin-nanokitosan.

Subjek penelitian berupa *patch hydrogel* dengan *base membrane* gelatin dan nanokitosan sebagai kontrol negatif, *patch hydrogel* dengan gelatin, nanokitosan, *cinnamaldehyde*, kalsium karbonat, dan FD-PRP sebagai perlakuan, serta *hydrocolloid dressing* sebagai kontrol positif. Masing-masing pada kondisi pH 6, 7, dan 8 yang direndam dalam 5 ml larutan PBS pada suhu 37°C. *Patch* ditimbang sebelum dan setelah perendaman hingga *patch* tidak bisa diambil dari rendaman. Uji *release* menggunakan UV-Vis spektrofotometer dengan panjang gelombang 360 nm.

Hasil Two-way ANOVA pada degradasi dan *release* menunjukkan adanya perbedaan yang signifikan ($p < 0,05$). Kesimpulan bahwa perbedaan pH secara signifikan berpengaruh terhadap degradasi dan *release*. Penambahan *cinnamaldehyde*, kalsium karbonat, dan FD-PRP pada *patch hydrogel* gelatin nanokitosan secara signifikan berpengaruh terhadap degradasi dan *release*.

Kata kunci : *patch hydrogel* nanokitosan, kalsium karbonat, *cinnamaldehyde*, degradasi, *release*.

ABSTRACT

Hydrogel patches function as transdermal drug delivery systems, sterile wound dressings, and cell infiltration media. Nanochitosan and cinnamaldehyde have antibacterial, antioxidant, and anti-inflammatory effects. Calcium carbonate is a source of calcium ions that support hemostasis. Platelet-Rich Plasma contains proteins and growth factors for tissue repair. Hydrocolloid dressings are able to maintain moisture and absorb exudate fluid around the wound area. This study aims to determine the effect of pH and the addition of cinnamaldehyde, calcium carbonate, and freeze-dried platelet-rich plasma on the degradation and release of gelatin-nanochitosan hydrogel patches.

The subjects were hydrogel patches with a gelatin base membrane and nanochitosan as a negative control, hydrogel patches with gelatin, nanochitosan, cinnamaldehyde, calcium carbonate, and FD-PRP as treatments, and hydrocolloid dressings as a positive control. Each patch, at pH 6, 7, and 8, was immersed in 5 ml of PBS solution at 37°C. The patch was weighed before and after immersion until it could no longer be removed from the solution. The release test used a UV-Vis spectrophotometer at a wavelength of 360 nm.

Two-way ANOVA results for degradation and release showed significant differences ($p < 0,05$). The conclusion is that pH differences significantly affect degradation and release. The addition of cinnamaldehyde, calcium carbonate, and FD-PRP to the gelatin nanochitosan hydrogel patch significantly affected degradation and release.

Keywords: hydrogel patch nanochitosan, calcium carbonate, cinnamaldehyde, degradation, release.